UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,712	12/14/2005	Francis Delaporte	026032-4933	2879

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EXAMINER
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ART UNIT	PAPER NUMBER
2836	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

	Application No.	Applicant(s)
Office Action Summary	10/536,712	DELAPORTE, FRANCIS
	Examiner	Art Unit	
	TIEN MAI	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*21 May 2008*</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   Applicant's response of 05/12/2008 has been entered in the record and

considered. Upon entering amendment, claims 1-3, 5 and 7 have been amended;

specification and claim objections have been withdrawn.

Claim Objections

2.   **Claim** 7 is objected to because of the following informalities: the last line of claim

7 includes the word "maintain this closure". Examiner has reason to believe that

Applicant intends to mean "maintain closure of the contact" instead of "maintain this

closure", and the examination of this claim will be based on this interpretation.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Shirato (US 6,518,764, "Shirato") in view of Glidden et al. (US 6,493,204, "Glidden")

5.   **In re claim 1**, Shirato discloses relay driving apparatus; the apparatus (fig. 6)

comprising: a control unit (31) configured to control an electromagnetic relay (15, 16),

the control unit generates a pulse-width modulation (PWM) signal according to a voltage

supply; at least one contact (SW) controlled by the control unit, the control unit is

configured to control the at least one contact according to the voltage supply (col. 11,

lines 21-40); the control unit is configured to provide a contacting voltage ("movable

time" in fig. 7A) to the relay, the contacting voltage is sufficient to close the at least one

contact (col. 11, lines 21-40); the control unit is configured to provide according to the

voltage supply, a maintaining voltage ("A/B" slots in fig. 7A) sufficient to maintain

closure of the at least one contact (fig. 7A). Shirato does not explicitly disclose the

control unit having a calculator for changing a cyclic ratio value of the pulse duration

modulator for supplying the maintaining voltage. Shirato rather discloses the control

unit configured to change a cyclic ratio value of the pulse duration modulator for

supplying the maintaining voltage (on/off in fig. 7A). Glidden discloses a control unit

(microprocessor, 35) generates a PWM voltage having a constant frequency and

variable duty cycle and the frequency of the PWM voltage is selected to be compatible

with the response time of a solenoid (40) (col. 5, line 64 – col. 6, line 19). It would have

been obvious to one of ordinary skill in the art at the time of the invention was made to

use a microprocessor since today they are cheap, small and easily available to be used

as a circuit part to control the relay. Also since the microprocessor is able to conduct

arithmetic operations, it reads on the calculator in the claim.

6.   **In re claim 2**, Shirato discloses a control unit (31) for an electromagnetic relay

coupled to a voltage source (terminal 7 couples to voltage source) comprising: a control

unit (31); the control unit inherently has a power supply-adapting module for adapting

the power supply of the relay, the control unit is configured to control the power supply-

adapting module, the control unit generates a pulse-width modulation (PWM) signal

according to a voltage supply; and at least one contact (15, 16) controlled by the control

unit; the control unit is configured to provide a contacting voltage ("movable time" in fig.

7A) sufficient to close the contact of the relay (col. 11, lines 21-40), the control unit is

modulated according to the voltage supply, and the control unit is configured to provide

a maintaining voltage ("A/B" slots in fig. 7A) sufficient to maintain closure of the at least

one contact. Shirato does not explicitly disclose the control unit having a calculator for

changing a cyclic ratio value of the pulse duration modulator for supplying the

maintaining voltage. Shirato rather discloses the control unit configured to change a

cyclic ratio value of the pulse duration modulator for supplying the maintaining voltage

(on/off in fig. 7A). Glidden discloses a control unit (microprocessor, 35) generates a

PWM voltage having a constant frequency and variable duty cycle and the frequency of

the PWM voltage is selected to be compatible with the response time of a solenoid (40)

(col. 5, line 64 – col. 6, line 19). It would have been obvious to one of ordinary skill in

the art at the time of the invention was made to use a microprocessor since today they

are cheap, small and easily available to be used as a circuit part to control the relay.

Also, since a microprocessor is able to conduct arithmetic operations, it reads on the

calculator in the claim.

7.   **In re claim 3**, Shirato's control unit inherently has a controller that control the

duration of operation of the power supply adapting module during closure of the contact

(col. 11, lines 21-32) ("movable time" duration).

8.   **In re claims 4, 8 and 9**, Shirato discloses that the control unit comprises a

module for detecting micro power cuts (col. 13, lines 25-43). Shirato discloses that the

control unit monitors the output voltage of the transformer 1, and if it is detected that

that output voltage of the transformer drops, the control unit supplies the base of the

transistor (Q5) with the pulse signal in which the logical level is set to "Hi" for the time

period corresponding to the movable time. Therefore, the movable iron piece 15 can be

avoided from being separated from the relay coil due to the voltage drop of the

commercial power source.

9.   **In re claim 5**, an oscillator generating pulses is inherent in Shirato's control unit

since Shirato's control unit generates the PWM signal to control a transistor (Q5), the

oscillator generated pulses (PWM signal) provides the contacting voltage and the

maintaining voltage. The control unit generates the contracting voltage such that the

duration of the contacting voltage is long enough to move armature of the relay and stay

in contact stage and also provides the maintaining voltage such that on/off the duration

of the maintaining voltage are long enough to keep armature in contact (on state) (col.

11, lines 33-46).

10.   **In re claim 6**, Shirato discloses the limitations as discussed above. Shirato does

not explicitly disclose a memory configured to store characteristics of the relay. Glidden

discloses PWM control of a solenoid wherein the microprocessor includes a memory to

store instructions (col. 1, lines 38-54). Using computer control is well known in the art.

Computer software improves functionality and enables the system to perform multiple

tasks. It would have been obvious to one of ordinary skill in the art at the time of the

invention was made to modify Shirato's control unit and add a memory, such as taught

by Glidden, in order to improve functionality and perform multiple tasks.

11.   **In re claim 7**, Shirato discloses relay driving apparatus; the apparatus (fig. 6)

comprising: a control command unit (31) which inherently has a pulse duration

modulator, the pulse duration modulator controlled by the control command unit, the

control command unit is programmed for modulating a power supply of an

electromagnetic relay (15, 16), the control command unit modulates the power supply

according to a voltage supply, the control command unit configured to provide a

contacting voltage ("movable time" in fig. 7A), the contacting voltage sufficient to close

the contact of the relay, and according to the voltage supply to provide a maintaining

voltage ("A/B" slots in fig. 7A), the maintaining voltage sufficient to maintain closure of

the contact (col. 11, lines 21-40). Shirato does not explicitly disclose a calculator for

changing a cyclic ratio value of the pulse duration modulator for supplying the

maintaining voltage. Shirato rather discloses the control unit configured to change a

cyclic ratio value of the pulse duration modulator for supplying the maintaining voltage

(on/off in fig. 7A). Glidden discloses a control unit (microprocessor, 35) generates a

PWM voltage having a constant frequency and variable duty cycle and the frequency of

the PWM voltage is selected to be compatible with the response time of a solenoid (40)

(col. 5, line 64 – col. 6, line 19). It would have been obvious to one of ordinary skill in

the art at the time of the invention was made to use a microprocessor since today they

are cheap, small and easily available to be used as a circuit part to control the relay.

Also, since a microprocessor is able to conduct arithmetic operations, it reads on the

calculator in the claim.

Response to Arguments

12.   Applicant's arguments with respect to claims 1, 2 and 7 have been considered

but are moot in view of the new ground(s) of rejection.

13.   Applicant argues that "Glidden does not identically disclose a memory configured

to store characteristics of the relay; instead, Glidden discloses a memory, which stores

an ABS algorithm". The examiner respectfully disagrees because the ABS algorithm

inherently includes (directly or indirectly) the relay parameters, such as "contacting

current" necessary to activate the armature, since otherwise the ABS algorithm would

not be able to provide efficient control of the relay.

Conclusion

14.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIEN MAI whose telephone number is (571)270-1277. The examiner can normally be reached on M-Th: 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on 571-272-2084. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Michael J Sherry/
Supervisory Patent Examiner, Art Unit 2836

/Tien Mai/
Examiner, Art Unit 2836